

In re Patent Application of
GENDRIER ET AL.
Serial No. 10/511,712
Filed: OCTOBER 15, 2004

REMARKS

Applicants thank the Examiner for the careful and thorough examination of the present application, and for the indication of allowable subject matter. By this amendment, Claims 35-66 and 69-100 have been amended, in view of the Examiner's suggestion, to eliminate minor informalities contained therein. Claims 35-100 remain pending in the application. Favorable reconsideration is respectfully requested.

I. The Claimed Invention

The invention provides a memory cell structure that avoids the phenomenon of transistor aging during repeated erase cycles. For example, Claim 34 is directed to a semiconductor memory device comprising an electrically erasable programmable non-volatile memory cell having a layer of gate material and including a floating-gate transistor with the source, drain and channel regions of the floating-gate transistor defining a control gate. Moreover, the memory cell includes a dielectric zone lying between a first part of the layer of gate material and a first semiconductor active zone electrically isolated from a second active zone incorporating the control gate. This dielectric zone defines a transfer zone for transferring, during erasure of the cell, the charges stored in the floating gate to the first active zone. Independent Claim 68 is a method counterpart to Claim 34 and includes similar features.

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II. The Claims are Patentable

Claims 34, 36-38, 44, 45, 67, 68, 70-72, 78 and 79 were rejected as being anticipated by Forbes et al. (U.S. 6,936,849) for the reasons set forth on pages 3 and 4 of the Office Action. The subject matter of Claims 35, 39-43, 46-66, 69, 73-77 and 80-100 was indicated as being allowable.

Applicants contend that Claims 34, 36-38, 44, 45, 67, 68, 70-72, 78 and 79 clearly define over the cited reference, and in view of the following remarks, favorable reconsideration of the rejection under 35 U.S.C. §102(e) is requested.

Each of the independent Claims 34 and 67 at least includes a dielectric zone lying between a first part of the layer of gate material and a first semiconductor active zone electrically isolated from a second active zone incorporating the control gate. The dielectric zone defines a transfer zone for transferring, during erasure of the cell, the charges stored in the floating gate to the first active zone. It is these combinations of features which is not fairly taught or suggested in the cited reference and which patentably defines over the cited reference.

The Examiner has relied on the Forbes et al. patent as allegedly disclosing a semiconductor memory device as claimed. However, Applicants maintain that the Examiner has mischaracterized the cited reference. Specifically, Applicants note that, on page 4 of the Office Action, the Examiner refers to FIG. 3A of Forbes et al. and the active region 302 and n-well 304 to meet the claimed first and second active zones,

respectively. But, from a thorough review of the Forbes et al. reference, it is clear that the n-well 304 is within the active region 302. Indeed, the n-well 304 is not "electrically isolated from" the active region 302. Furthermore, oxide layer 118 (relied upon by the Examiner to meet the claimed feature of a dielectric zone) in the device of Forbes et al. is also within the active region 302 and cannot be fairly characterized as being between a first part of the layer of gate material 106 and active region 302.

Additionally, the oxide layer 118 cannot be fairly characterized as defining a transfer zone for transferring, during erasure of the cell, the charges stored in the floating gate 106 to the active region 302. Again, the oxide layer 118 is within the active region 302.

As the Examiner is aware, a claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. The identical invention must be shown in as complete detail as is contained in the claim.

There is simply no teaching or suggestion in the Forbes et al. reference to provide the combination of features as claimed. Accordingly, for at least the reasons given above, Applicants maintain that the cited reference does not disclose or fairly suggests the invention as set forth in Claims 34 and 67. Furthermore, no proper modification of the teachings of this reference could result in the invention as claimed. Thus, the rejection under 35 U.S.C. §102(e) should be withdrawn.

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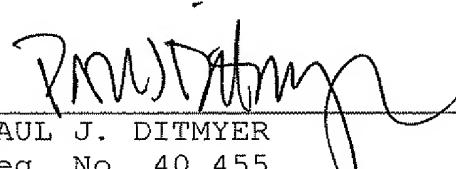
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It is submitted that the independent claims are patentable over the prior art. In view of the patentability of the independent claims, it is submitted that their dependent claims, which recite yet further distinguishing features are also patentable over the cited references for at least the reasons set forth above. Accordingly, these dependent claims require no further discussion herein.

III. Conclusion

In view of the foregoing remarks, it is respectfully submitted that the present application is in condition for allowance. An early notice thereof is earnestly solicited. If, after reviewing this Response, there are any remaining informalities which need to be resolved before the application can be passed to issue, the Examiner is invited and respectfully requested to contact the undersigned by telephone in order to resolve such informalities.

Respectfully submitted,


PAUL J. DITMYER
Reg. No. 40,455
Allen, Dyer, Doppelt, Milbrath
& Gilchrist, P.A.
255 S. Orange Avenue, Suite 1401
Post Office Box 3791
Orlando, Florida 32802
407-841-2330
407-841-2343 fax
Attorney for Applicants